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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,805	12/03/2003	Jainhua Yin	22126.0005U1	4107
23859	7590	06/23/2005	EXAMINER	
NEEDLE & ROSENBERG, P.C. SUITE 1000 999 PEACHTREE STREET ATLANTA, GA 30309-3915			MAYES, MELVIN C	
			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/726,805

Applicant(s)

YIN ET AL.

Examiner

Melvin Curtis Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 34-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/17/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Election/Restrictions

(1)

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-33, drawn to a method of making a piezoelectric composite, classified in class 156, subclass 257.
- II. Claims 34-36, drawn to a piezoelectric composite or transducer, classified in class 310, subclass 311.

(2)

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process such as inserting and bonding individual slabs into slots formed in a diced base slab.

(3)

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

(4)

During a telephone conversation with Kean DeCarlo on June 10, 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-33.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 34-36 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

(5)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(6)

Claims 1-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 1, 10 and 25 claim "a pitch P equal to the width W and the width K." Does this mean that pitch equal to either width W or width K or the equal to the sum of the widths.

According to the specification pitch P is equal to the sum of the widths.

Claim Rejections - 35 USC § 103

(7)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(8)

Claims 1-10, 14-17 and 25-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 602 261.

EP 0 602 261 discloses a method of making a piezoelectric composite for an ultrasonic transducer comprising: providing a pair of slabs; dicing each slab, such as by mechanical abrasive sawing, laser cutting, ultrasonic cutting, electrodischarge machining or wet or dry etching, to form first slots of width K and depth D and first posts (ridges) of width W therebetween and pitch spacing P, where $P > K > W$; prewetting the slabs and/or their slots with gap-filling polymeric material; interdigitating the posts of one slab with the slots of the other slab, the gaps filled with the polymeric material, to form a composite device; and further, utilizing the cutting, interdigitation and joining two pieces of material to produce a final composite of a two dimensional structure utilizing starting materials which consist of two previously formed structures (devices) (col. 3-7).

By utilizing two previously formed devices in steps of cutting, interdigitation and joining, a pair of first interdigitated piezoelectric composite slabs are obviously diced to form second slots and ridges, positioned in overlying interdigitation registration and connected, as claimed. Removing a portion of one diced first interdigitated slab to form a second composite slab would have been obvious to one of ordinary skill in the art to form the final transducer structure. It would have been obvious to one of ordinary skill in the art to have cut the second slots in the first formed devices (first interdigitated slabs) spaced a distance from an edge of the first posts

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(ridges) in order to cut second slots from first posts (ridges). The particular distance of the slots from the edges of the posts, such as $1/4P$, would have been obvious to one of ordinary skill in the art depending on the desired widths of the slots and posts for interdigitating the slabs to form the final composite for the transducer.

(9)

Claims 1, 2, 4-10, 14-17, 25, 26 and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over the "Fabrication of 2-2 Piezoelectric Composites by Interdigital Pair Bonding" Article.

The "Fabrication of 2-2 Piezoelectric Composites by Interdigital Pair Bonding" article discloses a method of making a composite comprising: dicing grooves in a pair of piezoelectric sheets, the width of the groove (slot) wider than the width of the stripe (ridge); backfilling one sheet with epoxy; interdigitally inserting the sheet into the other; lapping the top surface away to form a 2-2 composite; dicing grooves on a pair of 2-2 composites perpendicular to the previous cutting; and repeating the steps of backfilling, interdigitally inserting and lapping to product a final 1-3 composite (pg. 974).

It would have been obvious to one of ordinary skill in the art to have diced the grooves in the pair of 2-2 composites (first interdigitated piezoelectric composite slabs) spaced a shift distance from an edge of a first stripe (ridge) and a fraction of the pitch, as claimed, in order to form the grooves within the 2-2 composites to produce a final 1-3 composite.

(10)

Claims 3 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the “Fabrication of 2-2 Piezoelectric Composites by Interdigital Pair Bonding” Article as applied to claims 1 and 25 above, and further in view of EP 0 602 261.

EP 0 602 261 teaches that in making a piezoelectric composite for an ultrasonic transducer by interdigitation, the pair of slabs are diced by mechanical abrasive sawing, laser cutting, ultrasonic cutting, electrodischarge machining or wet or dry etching (col. 7, lines 42-47).

It would have been obvious to one of ordinary skill in the art to have used any of the methods of mechanical abrasive sawing, laser cutting, ultrasonic cutting, electrodischarge machining or wet or dry etching to dice the grooves in the sheets in the method of the “Fabrication...” article, as taught by EP ‘261, as used to dice piezoelectric slabs for making a piezoelectric composite by interdigitation.

Allowable Subject Matter

(11)

Claims 11-13 and 18-24 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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Conclusion

(12)

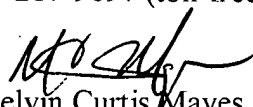
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(13)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
June 21, 2005